| Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of Secretary Of Defense   |         |         |                 |                                 |                        | DATE: Feb            | ruary 2012    |         |         |                     |            |  |  |
|--|---------|---------|-----------------|---------------------------------|------------------------|----------------------|---------------|---------|---------|---------------------|------------|--|--|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: Research, Development, Test & Evaluation, Defense-Wide<br>BA 3: Advanced Technology Development (ATD) |         |         |                 | <b>R-1 ITEM N</b><br>PE 0603942 | OMENCLA<br>2D8Z: Techr | TURE<br>nology Trans | fer and Trans | sition  |         |                     |            |  |  |
| COST (\$ in Millions)  | FY 2011 | FY 2012 | FY 2013<br>Base | FY 2013<br>OCO                  | FY 2013<br>Total       | FY 2014              | FY 2015       | FY 2016 | FY 2017 | Cost To<br>Complete | Total Cost |  |  |
| Total Program Element  | 19.842  | -       | -               | -                               | -                      | -                    | -             | -       | -       | Continuing          | Continuing |  |  |
| P942: Technology Transfer  | 2.970   | -       | -               | -                               | -                      | -                    | -             | -       | -       | Continuing          | Continuing |  |  |
| P949: Technology Transition<br>Initiative  | 16.872  | -       | -               | -                               | -                      | -                    | -             | -       | -       | Continuing          | Continuing |  |  |

#### <u>Note</u>

Change from FY 2011 to FY 2012 reflects reallocation of funds from Technology Transfer P942 to Department of the Air Force PE 0604317F and reallocation of Technology Transition Initiative P949 to higher priority DoD requirements.

#### A. Mission Description and Budget Item Justification

The Technology Transfer and Transition (TT&T) program element has two sub-elements: Technology Transfer (P942), and Technology Transition Initiative (P949).

Defense Technology Transfer's three-fold mission is (1) integration of advanced commercial-sector technologies into Department of Defense (DoD) systems, particularly from nontraditional defense contractors; (2) spinoff of DoD-developed technologies to industry for product development and to make these technologies available for military acquisition; and (3) establishment of collaborative Research and Development (R&D) projects with the private sector for cost-sharing of new dual-use technology development.

The Technology Transition Initiative (TTI), authorized by Title 10 and Section 242 of the FY 2003 Defense Authorization Act, facilitates the rapid transition of new technologies from the DoD science and technology (S&T) base into DoD acquisition programs. The program addresses the funding gaps that exist between the time a mature technology is demonstrated and the time it can be funded and procured for use in an intended weapons system or operational capability for the warfighter. Since the TTI (P949) program inception in FY 2003, 78 projects have been initiated and 50 have completed. Of the 50 completed projects, 35 (70%) successfully transitioned to DoD Acquisition Programs of Record or procurement contracts for operational use and subsequent fielding.

| Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Office of   | of Secretary       | Of Defense                        |                                      | DATE: F     | ebruary 2012  |
|---|--------------------|-----------------------------------|--------------------------------------|-------------|---------------|
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: Research, Development, Test & Evaluation, Defense-Wide<br>BA 3: Advanced Technology Development (ATD) | <b>R-1</b><br>PE 0 | TEM NOMENCLAT<br>603942D8Z: Techn | <b>URE</b><br>ology Transfer and Tra | nsition     |               |
| B. Program Change Summary (\$ in Millions)  | FY 2011            | FY 2012                           | FY 2013 Base                         | FY 2013 OCO | FY 2013 Total |
| Previous President's Budget   | 23.310             | -                                 | -                                    | -           | -             |
| Current President's Budget  | 19.842             | -                                 | -                                    | -           | -             |
| Total Adjustments   | -3.468             | -                                 | -                                    | -           | -             |
| <ul> <li>Congressional General Reductions</li> </ul>  | -                  | -                                 |                                      |             |               |
| <ul> <li>Congressional Directed Reductions</li> </ul>   | -                  | -                                 |                                      |             |               |
| <ul> <li>Congressional Rescissions</li> </ul>   | -                  | -                                 |                                      |             |               |
| <ul> <li>Congressional Adds</li> </ul>  | -                  | -                                 |                                      |             |               |
| <ul> <li>Congressional Directed Transfers</li> </ul>  | -                  | -                                 |                                      |             |               |
| <ul> <li>Reprogrammings</li> </ul>  | 2.900              | -                                 |                                      |             |               |
| SBIR/STTR Transfer  | -0.212             | -                                 |                                      |             |               |
| <ul> <li>Congressional Adjustments</li> </ul>   | -6.000             | -                                 | -                                    | -           | -             |
| <ul> <li>Economic Assumptions</li> </ul>  | -0.088             | -                                 | -                                    | -           | -             |
| • FFRDC   | -0.063             | -                                 | -                                    | -           | -             |
| <ul> <li>Other Program Adjustments</li> </ul>   | -0.005             | -                                 | -                                    | -           | -             |

### Change Summary Explanation

Change from FY 2011 to FY 2012 reflects: 1) reallocation of funds from Technology Transfer P942 to Department of the Air Force PE 0604317F and 2) reallocation of funds from Technology Transition Initiative P949 to higher priority DoD requirements.

| Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense |         |         |            | e           |              |         |            | DATE: Feb                 | ruary 2012 |            |                   |
|---|---------|---------|------------|-------------|--------------|---------|------------|---------------------------|------------|------------|-------------------|
| APPROPRIATION/BUDGET ACTIVITY   |         |         | R-1 ITEM N | OMENCLA     |              |         | PROJECT    | т                         |            |            |                   |
| 0400: Research, Development, Test & Evaluation, Defense-Wide                      |         |         | PE 0603942 | 2D8Z: Techn | ology Transi | fer and | P942: Tech | P942: Technology Transfer |            |            |                   |
| BA 3: Advanced Technology Development (ATD)                                       |         |         | Transition |             |              |         |            |                           |            |            |                   |
| COST (\$ in Millions)   |         |         | FY 2013    | FY 2013     | FY 2013      |         |            |                           |            | Cost To    |                   |
|   | FY 2011 | FY 2012 | Base       | 000         | Total        | FY 2014 | FY 2015    | FY 2016                   | FY 2017    | Complete   | <b>Total Cost</b> |
| P942: Technology Transfer   | 2.970   | -       | -          | -           | -            | -       | -          | -                         | -          | Continuing | Continuing        |

### Note

FY 2012 change from FY 2011 reflects reallocation of funds from Technology Transfer P942 to Department of the Air Force PE 0604317F.

#### A. Mission Description and Budget Item Justification

Defense Technology Transfer's three-fold mission is (1) integration of advanced commercial-sector technologies into Department of Defense (DoD) systems, particularly from nontraditional defense contractors; (2) spin-off of DoD developed technologies to industry to make these technologies available for military acquisition; and (3) establishment of collaborative Research & Development (R&D) projects with the private sector for cost-sharing of new dual-use technology development.

Defense Technology Transfer has been successful at helping the Department transfer its technologies to U.S. companies, and first responders making these technologies available for both military and commercial applications. Technology Transfer currently accounts for 50 percent of all DoD patent license agreements (PLA) and has brokered over 650 Patent License Agreements (PLAs), Cooperative Research and Development Agreements (CRADAs) and other R&D partnerships involving innovative companies new to DoD.

| B. Accomplishments/Planned Programs (\$ in Millions)   | FY 2011 | FY 2012 | FY 2013 |
|--|---------|---------|---------|
| Title: Marketing of DoD technologies   | 1.713   | -       | -       |
| <i>FY 2011 Accomplishments:</i><br>Continued active marketing of DoD-developed technologies to U.S. companies to establish PLAs to commercialize these technologies for both civilian and military applications. The objectives of this technology marketing activity were to (1) accelerate the transition of DoD-developed technologies to the warfighter; (2) lower the cost of DoD technology acquisition by developing a larger commercial market for dual-use technologies; (3) provide a return of revenue to DoD labs from commercial spin-off of defense technologies; and (4) fulfill DoD's Congressionally mandated technology transfer directives. |         |         |         |
| Title: Dual Use Technology Development   | 0.817   | -       | -       |
| <b>FY 2011 Accomplishments:</b><br>Actively promoted and brokered Cooperative Research and Development Agreements (CRADAs) between DoD labs and industry for development of technology with both commercial and military applications. This activity particularly focused on nontraditional defense contractors and was intended (1) to help lower the expense of new defense-related technology development through cost-sharing with industry, and (2) to help DoD benefit from private-sector technology investments and innovations.   |         |         |         |
| As an example, TechLink facilitated a CRADA and a PLA between the Army Edgewood Chemical Biological Center (ECBC) and BVS, Inc. of Missoula, Montana for an advanced integrated virus screening detection system. This system can rapidly screen for   |         |         |         |

| Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secreta  | tion: PB 2013 Office of Secretary Of Defense   |                     |   | DATE: February 2012 |         |  |
|---|--|---------------------|---|---------------------|---------|--|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: Research, Development, Test & Evaluation, Defense-Wide<br>BA 3: Advanced Technology Development (ATD)  | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603942D8Z: <i>Technology Transfer and</i><br><i>Transition</i> | PROJEC<br>P942: Teo | <b>PROJECT</b><br>P942: Technology Transfer |                     |         |  |
| B. Accomplishments/Planned Programs (\$ in Millions)  |  | ſ                   | FY 2011                                     | FY 2012             | FY 2013 |  |
| a wide variety of viruses that affect humans, wildlife, and livestock such BVS to contribute the development of a comprehensive viral database a  | as avian influenza in chickens. The CRADA provi<br>at ECBC.  | ides for            |   |                     |         |  |
| Title: Spin-In of Advanced Commercial-Sector Technologies   |  |                     | 0.440                                       | -                   | -       |  |
| <b>FY 2011 Accomplishments:</b><br>Actively promoted DoD Small Business Innovation Research (SBIR) (for<br>and Development (IR&D) programs to companies throughout the United<br>private-sector innovations and advanced commercial technologies into I | earch<br>egrate  |                     |   |                     |         |  |
|   | Accomplishments/Planned Programs S   | Subtotals           | 2.970                                       | -                   | -       |  |
| C. Other Program Funding Summary (\$ in Millions)<br>N/A<br>D. Acquisition Strategy<br>N/A<br>E. Performance Metrics<br>N/A.  |  |                     |   |                     |         |  |

| Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense                    |  |  |                 |                |                  | DATE: February 2012 |         |         |         |                     |            |
|--|--|--|-----------------|----------------|------------------|---------------------|---------|---------|---------|---------------------|------------|
| APPROPRIATION/BUDGET ACTIV<br>0400: Research, Development, Test<br>BA 3: Advanced Technology Develop | I <b>TY</b><br>& Evaluatior<br>oment (ATD) | <b>R-1 ITEM NOMENCLATUREPROJECT</b> Defense-WidePE 0603942D8Z: Technology Transfer and<br>TransitionP949: Technology Transition Initial<br>P149: Technology Transition Initial |                 |                |                  | ition Initiativ     | e       |         |         |                     |            |
| COST (\$ in Millions)  | FY 2011                                    | FY 2012  | FY 2013<br>Base | FY 2013<br>OCO | FY 2013<br>Total | FY 2014             | FY 2015 | FY 2016 | FY 2017 | Cost To<br>Complete | Total Cost |
| P949: Technology Transition<br>Initiative  | 16.872                                     | -  | -               | -              | -                | -                   | -       | -       | -       | Continuing          | Continuing |

### Note

FY 2012 changes from FY 2011 reflect reallocation of funds from Technology Transition Initiative to higher priority DoD requirements.

### A. Mission Description and Budget Item Justification

The Technology Transition Initiative (TTI), authorized by Title 10 and Section 242 of the FY 2003 Defense Authorization Act, facilitates the rapid transition of new technologies from the Department of Defense (DoD) science and technology (S&T) base into DoD acquisition programs. The program addresses the funding gaps that exist between the time a mature technology is demonstrated and the time it can be funded and procured for use in an intended weapons system or operational capability for the warfighter.

Since the program inception in FY 2003, 78 projects were initiated and 50 completed. Of the 50 completed projects, 35 (70%) successfully transitioned to DoD Acquisition Programs of Record or procurement contracts for operational use and subsequent fielding; exceeding the objective of 30% for demonstration programs (Strategic Objective 4-3, Office of the Under Secretary of Defense, Acquisition, Technology & Logistics (OUSD(AT&L)).

| B. Accomplishments/Planned Programs (\$ in Millions)  | FY 2011 | FY 2012 | FY 2013 |
|---|---------|---------|---------|
| Title: Electronic Image Intensifier for Pilotage (Army)   | 2.000   | -       | -       |
| <b>Description:</b> This project integrates Electronic Image Intensifier (EI2) technology into a lightweight sensor for the Apache Modernized-Pilot's Night Vision System (M-PNVS). Four form-fit, function and flight ready EI2 prototypes will be engineered, built, and delivered to PM Apache for aircraft qualification and users evaluation flights. The EI2 camera will provide performance that is equal to or greater than the current aviator's night vision goggles and at the same time allow for image fusion with the second generation Forward Looking Infrared (FLIR) on the Apache helicopter. |         |         |         |
| Program Outputs and Efficiencies: meet pilotage requirements for dynamic motion, resolution, and contrast through improved readout electronics and high definition format (1920 x 1080); exit criteria to be met include Aviator's Night Vision Imaging System (ANVIS) performance and \$35 thousand per camera cost; four pre-production prototype cameras delivered for operational flight testing in FY 2011. TTI funding accelerates the transition of this capability by two to three years.   |         |         |         |
| <ul> <li>FY 2011 Accomplishments:</li> <li>Integrated prototype into Apache aircraft; completed aircraft qualification, operational flight testing and initiated procurement activities.</li> <li>Successfully conducted two ground-based demos of the camera on an Apache in Yuma in March and May 2011.</li> </ul>  |         |         |         |

| Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secreta  | ary Of Defense   |   | DATE: Feb                                   | oruary 2012 |         |  |
|---|--|---|---|-------------|---------|--|
| APPROPRIATION/BUDGET ACTIVITY<br>0400: Research, Development, Test & Evaluation, Defense-Wide<br>BA 3: Advanced Technology Development (ATD)  | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603942D8Z: <i>Technology Transfer and</i><br><i>Transition</i>   | PROJECT<br>P949: Tecl   | JECT<br>9: Technology Transition Initiative |             |         |  |
| B. Accomplishments/Planned Programs (\$ in Millions)  |  |   | FY 2011                                     | FY 2012     | FY 2013 |  |
| <ul> <li>Tested prototype in M-PNVS with integrated helmet and display sight s</li> <li>Delivered 4 pre-production prototypes.</li> <li>Awarded Phase 3 contract to Intevac (February 2011).</li> <li>Demonstrated operational prototype to PM Apache in an M-PNVS on a</li> <li>Evaluated camera performance at Army Night Vision &amp; Electronic Sen</li> <li>Submitted all environmental qualification plans/procedures to Aviation</li> <li>Received approval from AED on environmental qual test plans.</li> </ul>  | system (IHADSS).<br>an Apache helicopter (March and May 2011).<br>sors Directorate (NVESD) (February-March 2011)<br>Engineering Directorate (AED) (April-May 2011).  | ).  |   |             |         |  |
| <i>Title:</i> Medium Caliber Cartridge Improvements using Micro Electro-Med<br><i>Description:</i> 40 millimeter (mm) high-explosive, dual-purpose (HEDP) I<br>the 1950's and 1970's respectively, and are used with the M203 low-vel<br>gun by all services. Both cartridges use point detonating fuzes with med<br>detonate on soft impact targets or high graze angles. The objective of the<br>through a Micro-Electro-Mechanical (MEMS) fuzing system that incorpo-<br>paired MEMS impact sensors, self-destruct capability, command arm er<br>explosive ink loading. In addition to improved reliability, these design er<br>Outputs and efficiencies: Incorporate impact sensors that will sense initie<br>explosive train for improved lethality and improved reliability on soft targ<br>and also significantly reduce the number of duds on the battlefield and t<br>less volume providing room for improvements in lethality or other future<br>technology from the Army Armament Research, Development and Engin<br>Weapons (PM-SW) in approximately three years. | chanical Systems and Direct Write Explosive Ink<br>M433 and M430 cartridges have been in service s<br>ocity grenade launcher and the MK-19 grenade m<br>chanical safe and arm (S&A) devices which do no<br>his effort is to improve the reliability of these cartri<br>orates electronic initiation, improved target sensing<br>hable, more accurate arming distance, and autom<br>nhancements will reduce volume and cost.<br>ial impact and electronically send a signal to initial<br>gets (from 50 percent current performance to 90 per<br>raining ranges. The 40mm MEMS Fuze also will<br>alternate applications. TTI accelerates transition<br>neering Center (ARDEC) to Project-Manager Solo | since<br>hachine<br>t reliably<br>dges<br>g using<br>ated<br>te the<br>ercent),<br>require<br>of this<br>dier | 1.200                                       | -           | -       |  |
| <ul> <li>FY 2011 Accomplishments:</li> <li>Redesigned power source with a 36% volume reduction, and verified in</li> <li>Completed update of fuze circuit.</li> <li>Completed S&amp;A modification and verification.</li> <li>EDF-11 explosive ink qualified for tri-service use.</li> <li>Initiated automation of S&amp;A build under ATK contract. Onyx platform p</li> </ul>   | n high velocity ballistic firing.<br>erforming all required operations.  |   |   |             |         |  |
| <i>Title:</i> Precision Fires Image (PFI) Software Suite Handheld Capability (I <i>Description:</i> Currently Overseas Contingency Operations (OCO) mission dismounted operators, (conventional and Special Operations Forces (Section 2017))   | Navy)<br>ons are planned using traditional means and requ<br>OF)), who do not carry laptop computers.  The mi  | ire<br>ssion  | 1.300                                       | -           | -       |  |

| Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secreta   | ary Of Defense   |   | DATE: Fe   | oruary 2012 |         |  |
|--|--|---|--|-------------|---------|--|
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: Research, Development, Test & Evaluation, Defense-Wide<br>BA 3: Advanced Technology Development (ATD)  | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603942D8Z: <i>Technology Transfer and</i><br><i>Transition</i>   | <b>PROJEC</b><br>P949: <i>Tec</i>                     | <b>PROJECT</b><br>P949: Technology Transition Initiative |             |         |  |
| B. Accomplishments/Planned Programs (\$ in Millions)   |  | Γ   | FY 2011  | FY 2012     | FY 2013 |  |
| set is currently supported by paper. The objective of this project is to int<br>Force Protection, Direct Action, etc.) capability on a Windows CE/mobile<br>and deployed technology. The availability of these software tools on a h<br>capabilities by enhancing situational awareness, precision targeting, and  | tegrate Battlespace Awareness (Mission Planning<br>e handheld computer by building upon already pro<br>nandheld computer will immediately advance warf<br>d rapid employment at the tactical level.  | ,<br>ven<br>ghter                                     |  |             |         |  |
| Program Outputs and Efficiencies: This project will generate and transit geographical capabilities on the Army's Pocket Sized Forward Entry Dev<br>Windows CE/mobile handheld computers. These forward operating Bat<br>the previously transitioned and deployed Precision Fires Image (PFI), wi<br>validated, Central Command (CENTCOM) approved, image based target<br>to the handheld computer will be advantageous in achieving advanced r<br>shorter operational readiness delays. The TTI funding will accelerate the<br>capability by two to three years. | ion a software suite that provides image, video, and<br>vices (PFED) and compatible Special Operations<br>talespace Awareness applications will be built aroun<br>hich is a National Geospatial-Intelligence Agency<br>eting tool for coordinate seeking weapons. Integra<br>mission capability with less weight, space, and pro-<br>e acquisition and integration of this handheld software | nd<br>Forces<br>Ind<br>(NGA)<br>ation<br>wide<br>vare |  |             |         |  |
| FY 2011 Accomplishments:<br>- PFI software is currently used operationally by United States Convention<br>- Australia and the United Kingdom completed foreign military sales case<br>- OSD (DARPA) resourced a "port" of the TTI PFI into a android operation<br>- The U.S. Army sent Mobile Training Teams (MTT) into Afghanistan to<br>- Successfully transitioned into the US Army Pocket-Size Forward Entry<br>- Evaluated by the USMC for tactical air platforms that do not have moving   | onal and Special Forces.<br>es with the United States for PFI technology.<br>ng system.<br>instruct PFI to support Precision Guided Mortars.<br>Device (PFED) Program of Record.<br>ng maps (i.e. AH-1 Cobra, AV-8 Harrier, F/A-18 H   | lornet).  |  |             |         |  |
| Title: Hellfire Height of Burst (HOB) Sensor (Army)  |  |   | 2.000  | -           | -       |  |
| <b>Description:</b> The HOB Sensor is a miniaturized radio frequency (RF) ta Electronic Safe and Arm Device (ESAD) being incorporated into the nex provides for improved lethality against targets in the open by detonating targets. This TTI project funds the final design and engineering of the H system level environmental and hardware-in-the-loop testing, and allows   | rrget detection device that will be integrated into that<br>a generation Hellfire missile (Hellfire R). The HOE<br>the warhead at a height above ground optimized<br>IOB sensor optimized for Hellfire, provides compo<br>s two flight tests of HOB sensor equipped missiles   | te new<br>3 sensor<br>for these<br>nent and<br>5.     |  |             |         |  |
| Program Outputs and Efficiencies: The HOB sensor will be integrated in (HWIL), environmental, and flight testing. The final outcome will be two flight will replace the warhead with a telemetry package to record the mi sensor triggers the warhead. The second flight will incorporate both the be collected to validate the modeled performance against targets in the   | nto the Hellfire missile and undergo hardware-in-th<br>missile flights incorporating the HOB sensor. The<br>ssile flight data as well as the point at which the H<br>HOB sensor and the Hellfire warhead. Lethality d<br>open. Simulation has shown that the HOB senso   | ne-loop<br>e first<br>IOB<br>ata will<br>r will       |  |             |         |  |

| <b>ibit R-2A</b> , <b>RDT&amp;E Project Justification:</b> PB 2013 Office of Secretary Of Defense <b>DATE:</b> February 2012  |  |                                  |                    |                   |         |
|---|--|----------------------------------|--------------------|-------------------|---------|
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: Research, Development, Test & Evaluation, Defense-Wide<br>BA 3: Advanced Technology Development (ATD)   | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603942D8Z: <i>Technology Transfer and</i><br><i>Transition</i>   | <b>PROJEC</b><br>P949: <i>Te</i> | T<br>chnology Trar | nsition Initiativ | ve      |
| B. Accomplishments/Planned Programs (\$ in Millions)  |  | ſ                                | FY 2011            | FY 2012           | FY 2013 |
| significantly increase the lethality when fired from platforms that allow a this capability by two years.   | steep angle of impact. TTI accelerates the trans   | tion of                          |                    |                   |         |
| <ul> <li>FY 2011 Accomplishments:</li> <li>Completed the following:</li> <li>First HOB prototype demonstrations and tests at Redstone Arsenal (R</li> <li>L3 and Lockheed Martin preliminary designs;</li> <li>L3 HOB Sensor Component-Level preliminary design review (PBR);</li> <li>Lockheed Martin System-Level PDR;</li> <li>L3 HOB Sensor electrical detailed design;</li> <li>L3 HOB Sensor software and firmware detailed designs;</li> <li>Lockheed Martin ESAF electrical detailed design modifications to supple Lockheed Martin ESAF software and firmware code and initial testing.</li> </ul> | Rocket-on-a-Rope);<br>port HOB Sensor integration;<br>rations to support HOB Sensor integration; and   |                                  |                    |                   |         |
| Title: Hellfire Next Generation Captive Carry Health Monitor (NG-CCH  | М)   |                                  | 0.650              | -                 | -       |
| <b>Description:</b> The Hellfire NG-CCHM is a missile health monitoring develow-<br>environmental stresses tailored to the most recent Hellfire missile design<br>low-cost autonomous system capable of measuring and recording key lead<br>data acquisition device embedded into each missile and will be optimized<br>exposure, drop shock events and record vibration levels that can cause  | ice that measures and records operational and<br>gn, the AGM-114R model. The unit will be a self-p<br>health status parameters. The unit will be an elec<br>ed for long life to automatically monitor temperatu<br>e degradation to the missile over time. | owered,<br>tronic<br>re          |                    |                   |         |
| and maintenance burden to Warfighter; (2) increased reliability; (3) enh<br>accelerates the transition of this capability by two years.   | s to be demonstrated in the project are: (1) reduce<br>anced system safety; and (4) increased readiness  | ed costs<br>5. TTI               |                    |                   |         |
| <b>FY 2011 Accomplishments:</b><br>Completed the following: detailed electrical design; detailed packaging (HMU) CCAs; CCA board-level testing; Test Box design, fabrication, an unit test; and graphical user interface (GUI) test software to support interface   | design; fabrication and assembly of health moniton<br>and assembly; detailed software design; software ca<br>egration.   | r unit<br>ode and                |                    |                   |         |
| Title: Joint Service General Purpose Mask (JSGPM) Filter End-of-Serv  | ice-Life Indicator   |                                  | 0.350              | -                 | _       |
| <b>Description:</b> An end-of-service-life indicator (ESLI) has been developed protective mask filters that will alert the user to exchange the filter follow   | ed for chemical, biological radiological, nuclear (Cl<br>wing exposure to acid gas chemical warfare agent  | BRN)<br>s                        |                    |                   |         |

| Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secreta  | ry Of Defense  |  | DATE: Fe   | oruary 2012 |         |  |
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| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: Research, Development, Test & Evaluation, Defense-Wide<br>BA 3: Advanced Technology Development (ATD)   | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603942D8Z: <i>Technology Transfer and</i><br><i>Transition</i>   | PROJECT<br>P949: Tec                                       | <b>PROJECT</b><br>P949: Technology Transition Initiative |             |         |  |
| B. Accomplishments/Planned Programs (\$ in Millions)  |  | Γ  | FY 2011  | FY 2012     | FY 2013 |  |
| (CWAs). The technology to be transitioned consists of thin colorimetric is<br>sensitive dyes and reagents that target common functional groups and c<br>and select Toxic Industrial Chemicals (TICs). The approach is to place t<br>the carbon bed so it can react with the passing agent wave front to produc<br>the filter well before its gas-life capacity is depleted.   | agents<br>ct with<br>place   |  |  |             |         |  |
| Program Outputs and Efficiencies: The Joint Service General Purpose Mask (JSGPM) CBRN filter housing will be equipped<br>with a transparent plastic window to view the indicator response. The ESLI will be designed to provide a visual signal when<br>approximately 20 to 60 percent of the filter's service life capacity is expired, depending on the target agent. The ESLI technology<br>will be transitioned to the M50 JSGPM acquisition program as a spiral upgrade (product improvement) to the current primary<br>CBRN filter. TTI funding accelerates this transition by two years. |  |  |  |             |         |  |
| <ul> <li>FY 2011 Accomplishments:</li> <li>Indicator Performance: Subcontractor completed improvements to both original.</li> <li>Indicator Robustness: Subcontractor completed required improvements</li> <li>Indicator Position Selected: Preliminary testing shows indication prior to both original statements</li> </ul>   | ivalent to   |  |  |             |         |  |
| Title: Integrated Information Management System (IIMS) Transition (Air  | Force)   |  | 1.900  | -           | -       |  |
| <b>Description:</b> The Integrated Information Management System (IIMS) is<br>the management of conventional and Chemical, Biological, Radiological<br>incident response sites. IIMS includes detector/ warning networks, acce<br>sector and coalition partner organizations. IIMS is in the base defense of<br>System – Unit Level/Unit Command and Control (TBMCS-UL/UC2). It a<br>replacing the Survival Recovery Center (SRC). It improves decision mal<br>conventional or CBRN incident.   | a collaborative situational awareness tool which a<br>, and Nuclear (CBRN) events at fixed, expeditional<br>ess to CBRN models, and information exchange w<br>component of the AF Theater Battle Management<br>ddresses both conventional and CBRN incidents.<br>king and battle management activities in the even | iids in<br>ary and<br>ith civil<br>Core<br>It is<br>t of a |  |             |         |  |
| The objective of this effort is to transition IIMS into TBMCS-UL/UC2 Incr<br>The additional IIMS capabilities will augment the fielded TBMC-UL/UC2<br>capability, and to incorporate joint CBRN tools. A successful transition of<br>process will significantly increase the base defense/response capabilities   | ement Two, and subsequently into the final TBMC<br>to extend original capabilities, provide a stand-alc<br>of IIMS to TBMCS-UC2 through this spiral develop<br>s available to the warfighter.  | S-UC2.<br>one<br>oment                                     |  |             |         |  |
| Program outputs and efficiencies: TTI funding accelerates the SRC repl<br>efficiently identify and respond to issues preventing the flying mission by   | acement with planned upgrades to IIMS that more<br>1-2 years. The transition of IIMS into the TBMCS  | e<br>6-  |  |             |         |  |

| Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secreta   | R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense DATE: February 2012  |  |                   |         |
|--|--|--|-------------------|---------|
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: Research, Development, Test & Evaluation, Defense-Wide<br>BA 3: Advanced Technology Development (ATD)  | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603942D8Z: <i>Technology Transfer and</i><br><i>Transition</i>   | PROJECT<br>P949: Technology  | ransition Initiat | ive     |
| B. Accomplishments/Planned Programs (\$ in Millions)   |  | FY 201 <sup>4</sup>  | FY 2012           | FY 2013 |
| UC2 N-tier Service Oriented Architecture enables transition of new capa<br>and the adjudication of any Priority I or Priority II software trouble report<br>general quality and reliability standards and include standard software p<br>code, documentation, test results). TTI funding accelerates upgrades to<br>communications with off-base agencies by 4+ years.   | abilities into TBMCS-UC2 through the IIMS framew<br>s at the time of transition. The software will adher<br>product sets upon delivery (i.e. source code, exect<br>integrate sensor/detector networks and improve  | vork<br>e to<br>utable   |                   |         |
| <b>FY 2011 Accomplishments:</b><br>- UL/UC2 Increment 1 with IIMS received fielding message in March 11.<br>- UL/UC2 with IIMS selected for AF wide fielding to address critical defic<br>- IIMS integration/transition to UL/UC2 Increment 2 on schedule for form   | ciency in Installation Command and Control.<br>nal 4Q FY11 DT/OT testing.  |  |                   |         |
| Title: Surfactant System for Surface CB Agent Removal  |  | 0.3  | 55 -              | -       |
| <b>Description:</b> Mature a multi-purpose surfactant technology to accelerate (DFoS). There is an immediate and unmet requirement for a cargo airce aircraft is ineffective in decontaminating most Chemical and Biological (currently fielded decontaminants and aircraft exteriors. Current decontal logistics burden. The surfactant technology will provide the Warfighter of CB hazards to operational (threshold) or thorough (objective) levels. Mis surfactant technology can be used as a routine cleaning compound as we transition by more than two years. | te its transition to the Decontamination Family of S<br>raft decontaminant. The primary means to decon<br>CB) hazards and material compatibility issues exi<br>aminants are single purpose items and carry a sig<br>with a multi-use, advanced formulation for mitigati<br>IL-PRF-87937D testing will be conducted to qualif<br>be inserted on the Qualified Products List (QPL).<br>well as an aircraft-cleaning compound. TTI accele | Systems<br>taminate<br>st with<br>nificant<br>ng<br>y the<br>The<br>erates |                   |         |
| Outputs and efficiencies: a) Validate chemical efficacy (via contact and demonstrate biological efficacy; c) MIL-PRF-87937D qualified product (pimpact).   | vapor testing) on priority painted materials; b)<br>physical, chemical, toxicological properties, envirc   | nmental  |                   |         |
| FY 2011 Accomplishments:<br>- Live agent tests were conducted to compare SuperSoap to Aircraft Cle<br>decontaminates statistically better on Aircraft Topcoat and other materia<br>- Concept of Operations for SuperSoap (dilution ratio, optimized sprayin<br>- Lab-scale sprayers were delivered to Edgewood Chemical and Biologi<br>Dahlgren for chemical and biological efficacy testing.  | eaners qualified by MIL-PRF-87937D; SuperSoap<br>als.<br>Ig conditions, etc.) were established.<br>Ical Center and the Naval Surface Warfare Center  | ·_   |                   |         |
| Title: Accelerated Interlocking Mortar Increment Container Technology  | (Army)   | 0.6  | - 88              | -       |

| Exhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense  |  | DATE: F   | DATE: February 2012 |         |  |
|--|--|---|---------------------|---------|--|
| <b>APPROPRIATION/BUDGET ACTIVITY</b><br>0400: Research, Development, Test & Evaluation, Defense-Wide<br>BA 3: Advanced Technology Development (ATD)  | <b>R-1 ITEM NOMENCLATURE</b><br>PE 0603942D8Z: <i>Technology Transfer and</i><br><i>Transition</i> | PROJECT<br>P949: Technology Transition Initiative |                     |         |  |
| B. Accomplishments/Planned Programs (\$ in Millions)   |  | FY 2011   | FY 2012             | FY 2013 |  |
| <b>Description:</b> The objective of this program is accelerate the transition of interlocking mortar increment container (MIC) design and fabrication technology to ensure uniform propellant ignition and reduce differential pressures which will eliminate a noted safety critical mechanism and reduce the possibility of critical short rounds <80% of intended range) due to shearing of fin blades and asymmetrical burn. The interlocking MIC design eliminates the potential alignment of the open ends of the propelling charges and will greatly reduce the chances of more propellant being on one side of the mortar fin boom. This eliminates the imbalance of the energetics and associated potential problematic pressure differential within the mortar tube. The warfighter will have no chance of a sheared fin failure due to unexpected alignment of propelling charges which, in turn, will reduce the possibility of a critically short flight 120mm rounds in theater. Accelerating the maturation, transition, and insertion of this interlocking "high hat" mortar increment container technology into the 120mm mortar ammo program of record (PoR) will improve safety and accuracy for our light and dismounted ground forces. It also will lay the foundation for potential subsequent application to 60mm and 81mm mortar ammo if warranted .  Program Outputs and Efficiencies: Provides the warfighter with safer mortar ammunition; further prevents the possibility of unexpected short flight of 120mm mortar rounds in theater; improves soldier safety during training. TTI accelerates the |  |   |                     |         |  |
| <ul> <li>FY 2011 Accomplishments:</li> <li>Generated drawings, specifications, and implemented engineering change proposal into current 120mm Mortar Propelling Charge Contract.</li> <li>Charged establishment and uniformity; Esterline produced inert and live parts.</li> <li>Initial sequential testing completed.</li> <li>Hot leg of sequential safety retest (per test plan).</li> <li>Ballistics testing completed.</li> <li>Esterline facilitization contract modification completed.</li> <li>Contract modification of improved packaging protector. Completed delivery of inert parts to Picatinny. Parts will be taken to the user and LAP facilities for familiarization with the new part. Delivery of live parts to Picatinny and American Ordnance for familiarization of new part completed.</li> </ul>  |  | g<br>to<br>or<br>6.470                            |                     |         |  |
| Title: Iransition Initiatives  |  | 6.479   | -                   | -       |  |
| <b>FY 2011 Accomplishments:</b><br>Addressed the funding gaps that exist between the time a mature technol procured for use in an intended weapons system or operational capability  | blogy is demonstrated and the time it can be funde<br>by for the warfighter.                       | d and   |                     |         |  |
|  | Accomplishments/Planned Programs Su  | ubtotals 16.872                                   | -                   | -       |  |

| xhibit R-2A, RDT&E Project Justification: PB 2013 Office of Secretary Of Defense |  | DATE: February 2012                    |  |
|--|--|--|--|
| APPROPRIATION/BUDGET ACTIVITY  | R-1 ITEM NOMENCLATURE                  | PROJECT                                |  |
| 0400: Research, Development, Test & Evaluation, Defense-Wide                     | PE 0603942D8Z: Technology Transfer and | P949: Technology Transition Initiative |  |
| BA 3: Advanced Technology Development (ATD)                                      | Transition                             |  |  |
| C. Other Program Funding Summary (\$ in Millions)                                |  |  |  |
| N/A  |  |  |  |
| D Acquisition Strategy   |  |  |  |
| N/A  |  |  |  |
|  |  |  |  |
| E. Performance Metrics   |  |  |  |
| N/A  |  |  |  |
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